

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20603.

FACILITY NAME (1)

Browns Ferry Nuclear (BFN) Plant Unit 2

DOCKET NUMBER (2)

05000260

PAGE (3)

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TITLE (4) Engineered safety feature (ESF) actuations when the 2B reactor protection system bus was transferred to a de-energized source because of inattention-to-detail in the preparation of a clearance

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | | |
|--------------------|-----|---|----------------|-------------------|--------------------|-----------------|-----|-------------------|-------------------------------|---------------------------|--|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER | |
| 03 | 08 | 1998 | 1998 | 001 | 00 | 04 | 07 | 1998 | NA | | |
| OPERATING MODE (9) | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) | | | | | | | | | |
| N | | 20.2201(b) | | | 20.2203(a)(2)(v) | | | 50.73(a)(2)(i) | | 50.73(a)(2)(viii) | |
| POWER LEVEL (10) | | 20.2203(a)(1) | | | 20.2203(a)(3)(i) | | | 50.73(a)(2)(ii) | | 50.73(a)(2)(x) | |
| 100 | | 20.2203(a)(2)(i) | | | 20.2203(a)(3)(iii) | | | 50.73(a)(2)(iii) | | 73.71 | |
| | | 20.2203(a)(2)(ii) | | | 20.2203(a)(4) | | | X 50.73(a)(2)(iv) | | OTHER | |
| | | 20.2203(a)(2)(iii) | | | 50.36(c)(1) | | | 50.73(a)(2)(v) | | Specify in Abstract below | |
| | | 20.2203(a)(2)(iv) | | | 50.36(c)(2) | | | 50.73(a)(2)(vii) | | or in NRC Form 366A | |

LICENSEE CONTACT FOR THIS LER (12)

NAME

Clarence M. Root, Industry Affairs Specialist

TELEPHONE NUMBER (Include Area Code)

(205) 729-7547

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPROS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPROS |
|-------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|
| N/A | | | | | N/A | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE).

X NO

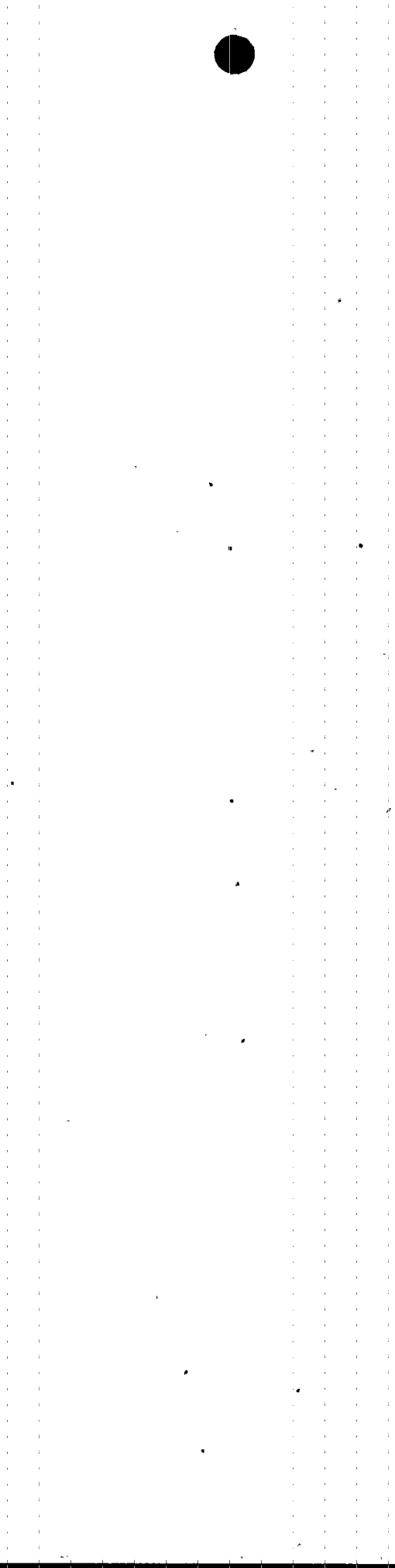
EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On March 8, 1998, at 2056 Central Standard Time (CST), with Unit 2 and Unit 3 operating at 100 percent power and Unit 1 shutdown and defueled, Unit 2 received a channel 2B reactor protection system (RPS) half-scam, primary containment isolation systems groups 2, 3, 6 and 8 isolations, initiation of the standby gas treatment system and initiation of control room emergency ventilation train A because power was lost to RPS bus 2B. The RPS bus was de-energized when Assistant Unit Operators placing a clearance to support work on the RPS motor generator set, placed the NORMAL/ALTERNATE control switch to the NORMAL position as specified on the clearance sheet. The normal source of power to the RPS bus was not available because the 2B RPS motor-generator set had been removed from service for its semi-annual inspection and preventive maintenance. The root cause of this event was the failure of the Shift Support Tagging (SST) Unit Operator (UO) preparing the clearance to exercise proper attention to detail to ensure the tagged position for the 2B RPS NORMAL/ALTERNATE switch was listed as ALTERNATE on the clearance component position sheet. Appropriate personnel corrective actions have been taken with the SST UO who prepared the clearance and with the Shift Support Supervisor (SSS) for his failure to properly verify that the switch position was correct. Also, for a six-week period, a second SST UO will be required to review any clearance written by the SST UO involved in this event, prior to his presenting the clearance to the SSS for review. This report is submitted in accordance with 10 CFR 50.73(a)(2)(iv) as an event or condition that resulted in an automatic actuation of an engineered safety feature.

LER 296/95004 involved loss of an RPS bus when a 480 volt shutdown board was transferred to a de-energized alternate supply.



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ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST: 500 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20603.

FACILITY NAME (1)

Browns Ferry Nuclear (BFN) Plant Unit 2

DOCKET NUMBER (2)

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I. PLANT CONDITION(S)

At the time this event occurred, Unit 2 and Unit 3 were operating at 100 percent power. Unit 1 was shutdown and defueled.

II. DESCRIPTION OF EVENT

A. Event:

On March 8, 1998, at 2056 hours Central Standard Time (CST), Unit 2 received a channel 2B reactor protection system (RPS) [JC] half-scam when power was lost to the 2B RPS bus. The loss of power resulted in primary containment isolation system (PCIS) [JM] groups 2, 3, 6, and 8 isolations, initiation of all three trains of the standby gas treatment (SGT) system [BH], and initiation of control room emergency ventilation (CREV) system [VI] train A.

Prior to the event, the 2B RPS bus had been transferred to its alternate source of power by the Unit Supervisor [utility, licensed], and the 2B RPS Motor Generator (MG) set removed from service for its semi-annual inspection and preventive maintenance. The Shift Support Tagging (SST) Unit Operator (UO) [utility, licensed] prepared a clearance to support work on the 2B RPS MG set, listing the tagged position on the clearance component position sheet for the bus NORMAL/ALTERNATE control switch as NORMAL, instead of ALTERNATE. The Shift Support Supervisor (SSS) [utility, nonlicensed] reviewing the clearance failed to identify that the 2B RPS MG set was being tagged and that the NORMAL/ALTERNATE control switch should be listed as ALTERNATE. While the Assistant Unit Operators (AUOs) [utility, nonlicensed] were placing the clearance to support work on the 2B RPS MG set, they placed the bus NORMAL/ALTERNATE control switch to NORMAL, the position specified on the clearance sheet. This action caused the 2B RPS bus to be transferred to the de-energized normal source and resulted in the half-scam, PCIS isolations, and the SGT system and CREV initiation signals. The affected systems were restored to normal within 25 minutes.

B. Inoperable Structures, Components, or Systems that Contributed to the Event:

None

C. Dates and Approximate Times of Major Occurrences:

March 8, 1998

2008 hours, CST

Operations held a pre-job briefing for the pending transfer of the 2B RPS bus from NORMAL to ALTERNATE in accordance with the operating instruction.

2022 hours, CST

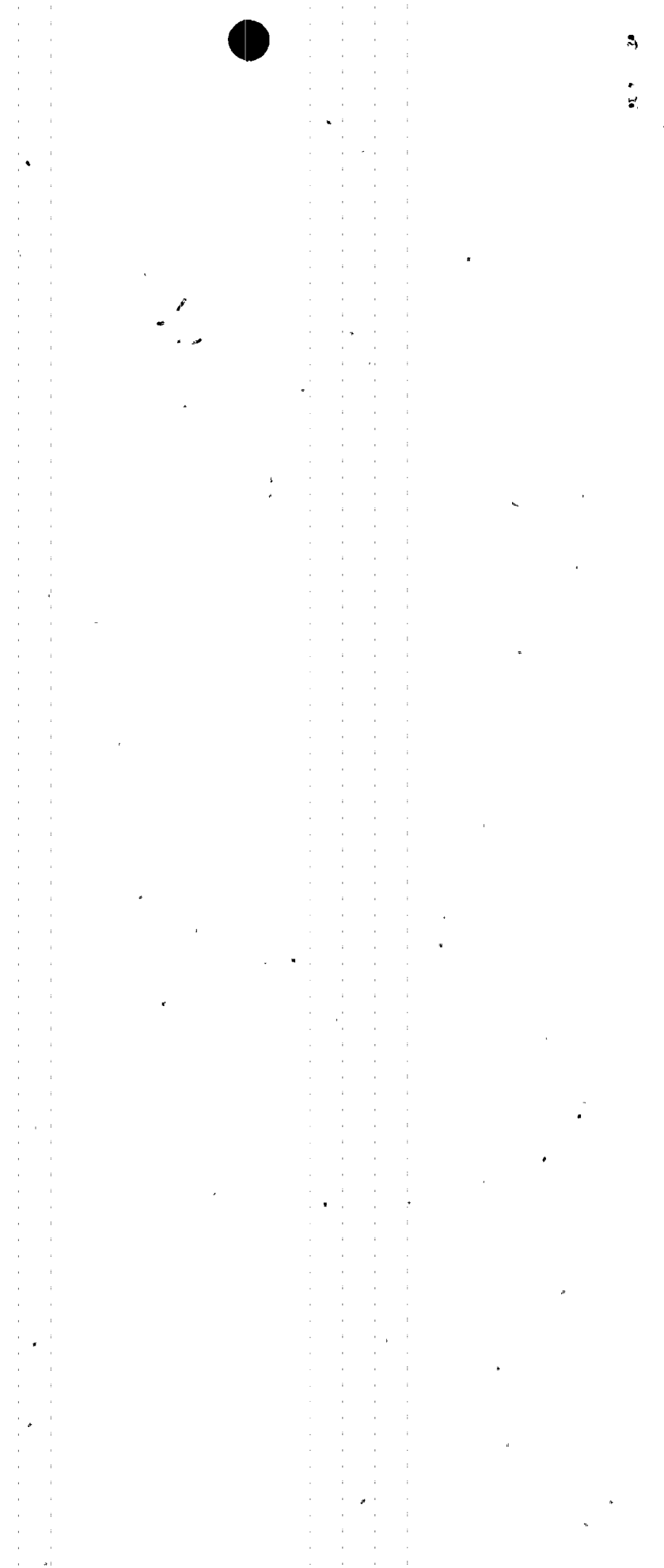
Operations transferred the 2B RPS bus from its NORMAL to its ALTERNATE source and shutdown the 2B RPS MG set.

2040 hours, CST

The Unit Supervisor authorized placement of a clearance on 2B RPS MG set for semi-annual inspection and preventive maintenance.

2056 hours, CST

Received a 2B RPS half-scam and associated isolations; SGT and CREV systems initiated.



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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

2105 hours, CST AUOs reported to the control room that they had placed the 2B RPS NORMAL/ALTERNATE control switch to the NORMAL position, causing the loss of the 2B RPS bus.

2111 hours, CST A Unit Supervisor restored the 2B RPS bus to its transformer source.

2121 hours, CST All systems returned to normal.

2314 hours, CST Made a 4-hour report to the NRC in accordance with 10CFR50.72.(b).2.ii

D. Other Systems or Secondary Functions Affected:

None.

E. Method of Discovery:

This condition was discovered when the unit 2 control room received a half scram on the 2B RPS bus and associated ESF actuations.

F. Operators Actions:

The 2B RPS bus was restored and the systems were returned to normal.

G. Safety System Response:

All safety systems operated as expected in response to this event.

III. CAUSE OF THE EVENT

A. Immediate Cause:

The immediate cause of this event was loss of the 2B RPS bus when the 2B RPS bus NORMAL/ALTERNATE switch was placed to the NORMAL position.

B. Root Cause:

The root cause of this event was the failure of the SST UO [utility, licensed] preparing the clearance to exercise proper attention to detail to ensure the tagged position for the 2B RPS NORMAL/ALTERNATE switch was listed as ALTERNATE on the clearance component position sheet.

C. Contributing Factors:

The SSS [utility, nonlicensed] reviewing the clearance failed to identify that the 2B RPS MG set was being tagged and that the NORMAL/ALTERNATE switch position should be listed as ALTERNATE.

IV. ANALYSIS OF THE EVENT

This half-scram event occurred on Unit 2 and involved the Unit 2 RPS bus "B." Effects on Unit's 1 and 3 were limited to the start of SGT, CREV initiation, and the isolation and tripping of the respective unit's Refuel Zone



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Ventilation. The systems affected during this event are designed to shut down the reactor, contain and process any radioactive releases, and to fulfill their safety functions upon loss of initiation logic power. A full scram was not initiated because RPS bus 2A remained energized during the event. The systems responded correctly to the loss of power to the 2B RPS bus and, therefore, plant safety was not adversely affected. All initiations and isolations/actuations were consistent with, and to be expected with the loss of the 2B RPS bus. All systems were subsequently restored and this event did not affect the health and safety of plant personnel or the public.

V. CORRECTIVE ACTIONS

A. Immediate Corrective Actions:

The 2B RPS bus was restored to its transformer source and Unit 1, 2, and 3 systems affected by the loss of the bus were returned to normal.

B. Corrective Actions to Prevent Recurrence:

Appropriate personnel corrective actions have been taken with the SST UO who prepared the clearance and with the SSS for his failure to properly verify that the switch position was correct. For a six-week period, a second SST UO will be required to review any clearance written by the SST UO involved in this event, prior to his presenting the clearance to the SSS for review.¹

VI. ADDITIONAL INFORMATION

A. Failed Components:

None.

B. Previous Similar Events:

LER 296/95004 was similar because ESF actuations occurred from a loss of power to RPS bus 3A when a 480-volt shutdown board was transferred to a de-energized alternate supply. This event was caused by personnel error in that the licensed operator did not transfer the board in accordance with procedural requirements.

In the event described in this LER, the 2B RPS bus had already been transferred to its alternate supply and the NORMAL/ALTERNATE control switch placed in the ALTERNATE position. The AUOs were tagging equipment as specified on the clearance component position sheet. However, the position of the 2B RPS bus NORMAL/ALTERNATE control switch was incorrectly listed as NORMAL on the clearance sheet. When the AUOs transferred the switch to the specified NORMAL position, a loss of power to the RPS bus occurred. This event was not the result of a failure to follow procedure, and the corrective actions taken for LER 296/95004 would not have precluded this event.

VII. COMMITMENTS

None.

¹ TVA does not consider these corrective actions regulatory commitments. TVA's Corrective Action Program will track completion of these actions.

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